

Amendments to the Claims

Claim 1 (currently amended): A computer-implemented method of programmatically generating a class library to represent messages described in a structured language specification, comprising steps of:

detecting, during run-time processing of a machine-processable definition of a network-invocable service, a reference to a structured language specification;

locating, responsive to the detection, the referenced structured language specification, the structured language specification encoded in a structured markup language and specifying message syntax definitions for one or more messages usable for interacting with the network-invocable service; and

~~locating, responsive to the detection, a language-specific template that specifies an image for generating code as a class library for a particular coding language and specifies where corresponding portions of message syntax definitions are to be substituted therein; and~~

generating [[the]] code for the message syntax definitions in the located structured language specification, according to code-generation guidance specified in a dynamically-selected one of a plurality of language-specific code-generation templates that each specify guidance for generating code in a different programming language, the guidance specified as an image of code to be generated in that programming language and comprising syntax indicating where portions of the message syntax definitions are to be substituted for portions of the specified image, wherein the generated code for the message syntax definitions comprises the template and the definitions in the structured language specification, comprising the class library, such that instances of classes specified by the class library are instantiable to be dynamically

22 available for sending request messages to, and receiving response messages from, the network-
23 invocable service, further comprising steps of:

24 locating, in the structured language specification, the message syntax definitions
25 of the messages;

26 applying the selected template to the located message syntax definitions to
27 generate code that, when executed, will build an instance of [[the]] each message for sending and
28 will, if the message syntax definition for the message specifies parameters, dynamically obtain
29 values for the parameters and set those parameter values in the built instance;

30 applying the selected template to the located message syntax definitions to
31 generate code that, when executed, will send the built instance of [[the]] each message, including
32 any set parameter values, to the network-invocable service as a request message;

33 applying the selected template to the located message syntax definitions to
34 generate code that, when executed, will receive a response to the sent instance of [[the]] each
35 message from the network-invocable service as a response message and build a response instance
36 therefrom; and

37 applying the selected template to the located message syntax definitions to
38 generate code that, when executed, will dynamically obtain any defined response values from
39 [[the]] each received response message and populate the response instance therewith;

40 such that the ~~dynamically-generated~~ programmatically-generated code is dynamically
41 invocable during the run-time processing for sending the request messages to, and receiving the
42 response messages from, the network-invocable service.

1 Claim 2 (previously presented): The method according to Claim 1, wherein the structured
2 language specification is a schema.

1 Claim 3 (previously presented): The method according to Claim 1, wherein the structured
2 language specification is a Document Type Definition ("DTD").

1 Claim 4 (original): The method according to Claim 1, wherein the structured markup language is
2 Extensible Markup Language ("XML").

1 Claim 5 (previously presented): The method according to Claim 1, wherein the message syntax
2 definitions specify elements corresponding to the messages and optionally specify attributes
3 corresponding to the elements, the elements and attributes being encoded in the structured
4 markup language.

1 Claim 6 (previously presented): The method according to Claim 5, wherein the message syntax
2 definitions specify, for at least one of the elements, one or more child elements.

1 Claim 7 (previously presented): The method according to Claim 5, wherein the message syntax
2 definitions specify whether the attributes are required attributes.

Claims 8 - 15 (canceled)

Serial No. 10/016,933

-4-

RSW920010220US1

1 Claim 16 (previously presented): The method according to Claim 1, further comprising the step
2 of programmatically consulting one or more rules, wherein the rules specify one or more of (1)
3 where the generated code should be stored and (2) a name for a class library comprising the
4 generated code, to influence processing of the generating step.

Claims 17 - 19 (canceled)

1 Claim 20 (previously presented): The method according to Claim 1, wherein the network-
2 invocable service is a web service.

1 Claim 21 (previously presented): The method according to Claim 20, wherein the reference is
2 specified as a Uniform Resource Locator and the machine-processable definition is specified in a
3 Web Services Definition Language document.

Claim 22 - 25 (canceled)

1 Claim 26 (currently amended): A system for programmatically generating a class library to
2 represent messages described in a structured language specification, comprising:
3 means for detecting, during run-time processing of a machine-processable definition of a
4 network-invokable service, a reference to a structured language specification;
5 means for locating, responsive to the detection, the referenced structured language
6 specification, the structured language specification encoded in a structured markup language and

Serial No. 10/016,933

-5-

RSW920010220US1

7 specifying message syntax definitions for one or more messages usable for interacting with the
8 network-invocable service; and

9 ~~means for locating, responsive to the detection, a language-specific template that specifies~~
10 ~~an image for generating code as a class library for a particular coding language and specifies~~
11 ~~where corresponding portions of message syntax definitions are to be substituted therein; and~~

12 means for generating [[the]] code for the message syntax definitions in the located
13 structured language specification, according to code-generation guidance specified in a
14 dynamically-selected one of a plurality of language-specific code-generation templates that each
15 specify guidance for generating code in a different programming language, the guidance specified
16 as an image of code to be generated in that programming language and comprising syntax
17 indicating where portions of the message syntax definitions are to be substituted for portions of
18 the specified image, wherein the generated code for the message syntax definitions comprises the
19 template and the definitions in the structured language specification, comprising the class library,
20 such that instances of classes specified by the class library are instantiable to be dynamically
21 available for sending request messages to, and receiving response messages from, the network-
22 invocable service, further comprising:

23 means for locating, in the structured language specification, the message syntax
24 definitions of the messages;

25 means for applying the selected template to the located message syntax definitions
26 to generate code that, when executed, will build an instance of [[the]] each message for sending
27 and will, if the message syntax definition for the message specifies parameters, dynamically
28 obtain values for the parameters and set those parameter values in the built instance;

means for applying the selected template to the located message syntax definitions to generate code that, when executed, will send the built instance of [[the]] each message, including any set parameter values, to the network-invokable service as a request message;

means for applying the selected template to the located message syntax definitions to generate code that, when executed, will receive a response to the sent instance of [[the]] each message from the network-invokable service as a response message and build a response instance therefrom; and

means for applying the selected template to the located message syntax definitions to generate code that, when executed, will dynamically obtain any defined response values from [[the]] each received response message and populate the response instance therewith;

such that the dynamically-generated programmatically-generated code is dynamically invocable during the run-time processing for sending the request messages to, and receiving the response messages from, the network-invokable service.

Claim 27 (currently amended): A computer program product for programmatically generating a class library to represent messages described in a structured language specification, the computer program product embodied on one or more computer-usable media and comprising:

computer-readable program code [[means]] for detecting, during run-time processing of a machine-processable definition of a network-invokable service, a reference to a structured language specification;

computer-readable program code [[means]] for locating, responsive to the detection, the referenced structured language specification, the structured language specification encoded in a

9 structured markup language and specifying message syntax definitions for one or more messages
10 usable for interacting with the network-invocable service; and

11 ~~computer-readable program code means for locating, responsive to the detection, a~~
12 ~~language-specific template that specifies an image for generating code as a class library for a~~
13 ~~particular coding language and specifies where corresponding portions of message syntax~~
14 ~~definitions are to be substituted therein; and~~

15 computer-readable program code [[means]] for generating [[the]] code for the message
16 syntax definitions in the located structured language specification, according to code-generation
17 guidance specified in a dynamically-selected one of a plurality of language-specific code-
18 generation templates that each specify guidance for generating code in a different programming
19 language, the guidance specified as an image of code to be generated in that programming
20 language and comprising syntax indicating where portions of the message syntax definitions are
21 to be substituted for portions of the specified image, wherein the generated code for the message
22 syntax definitions comprises the template and the definitions in the structured language
23 specification, comprising the class library, such that instances of classes specified by the class
24 library are instantiable to be dynamically available for sending request messages to, and receiving
25 response messages from, the network-invocable service, further comprising:

26 computer-readable program code [[means]] for locating, in the structured
27 language specification, the message syntax definitions of the messages;

28 computer-readable program code [[means]] for applying the selected template to
29 the located message syntax definitions to generate code that, when executed, will build an
30 instance of [[the]] each message for sending and will, if the message syntax definition for the

31 message specifies parameters, dynamically obtain values for the parameters and set those
32 parameter values in the built instance;

33 computer-readable program code [[means]] for applying the selected template to
34 the located message syntax definitions to generate code that, when executed, will send the built
35 instance of [[the]] each message, including any set parameter values, to the network-invokable
36 service as a request message;

37 computer-readable program code [[means]] for applying the selected template to
38 the located message syntax definitions to generate code that, when executed, will receive a
39 response to the sent instance of [[the]] each message from the network-invokable service as a
40 response message and build a response instance therefrom; and

41 computer-readable program code [[means]] for applying the selected template to
42 the located message syntax definitions to generate code that, when executed, will dynamically
43 obtain any defined response values from [[the]] each received response message and populate the
44 response instance therewith;

45 such that the ~~dynamically-generated~~ programmatically-generated code is dynamically
46 invocable during the run-time processing for sending the request messages to, and receiving the
47 response messages from, the network-invokable service.

1 Claim 28 (new): The method according to Claim 1, wherein the dynamically-selected one of the
2 templates is that one of the templates that specifies the guidance in a particular programming
3 language for which the class library is to be generated.

- 1 Claim 29 (new): The method according to Claim 1, wherein each of the templates is independent
2 of the message syntax definitions for which the class library is to be generated.